

LCUG Service Quality Measurements (SQMs)

ASSUMPTION: OSS FULLY IMPLEMENTED BY ILEC

ORDERING AND PROVISIONING (OP)

Function	Measurement Objective	Proposed Service Quality Measurement
Orders completed within specified intervals	Measures the percentage and mean completion interval of orders (installation, feature change, service disconnect) completed with a requested due date that is equal or less than the interval specified in the Service Quality Measurements column.	<p>Unless specified below, orders with no Premises Visit or no physical work involved completed within 1 day of service order receipt *; orders that require Premises Visit or physical work: completed within 3 days of service order receipt *; 99% orders completed on due date *.</p> <p>Installation:</p> <ul style="list-style-type: none"> • UNE Platform (at least DS0 loop + local switch + all common elements) always within 24 hours, regardless of dispatch • UNE Channelized DS1 (DS1 loop + multiplexing) always within 48 hours • Unbundled DS0 loop always within 24 hours • Unbundled DS1 loop (unchannelized) always within 24 hours • Other Unbundled Loops always within 24 hours • Unbundled Switch always within 48 hours • Dedicated Transport - DS0/DS1 always within 3 business days • Dedicated Transport - DS3 always within 5 bus days <p>Feature Changes:</p> <ul style="list-style-type: none"> • All orders completed within 5 business hours of receipt <p>Disconnects:</p> <ul style="list-style-type: none"> • Resale Product or Svc Disconnects always within 24 hrs • UNE switching within 24 hours • UNE (other) within 24 hours <p>OP - 1 $\frac{\text{\# of Orders Completed on Time}}{\text{Total \# of Orders Completed}} \times 100$</p> <p>OP - 2 Mean Completion Time</p>

* Reported for the following types of service or facility: Resold POTS, Resold ISDN, Resold Centrex/Centrex-like, Resold PBX trunks, Resold Channelized T1.5 Service, Other Resold Services, UNE Platform (at least DS0 loop + local switch + transport elements), UNE Channelized DS1 (DS1 loop + multiplexing), Unbundled DS0 loop, Unbundled DS1 loop, Other Unbundled loops, Unbundled Switch, Other UNEs

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ORDERING AND PROVISIONING (OP) (con'd)

Function	Measurement Objective	Proposed Service Quality Measurement
Order Accuracy	Measures the accuracy and completeness of the ILEC provisioning or disconnecting service by comparing what was ordered & what was completed	<p>≥ 99% are completed without error</p> <p>OP-3 $\frac{\text{\# of Orders Completed w/o error}}{\text{Total \# of Orders Sent}} \times 100$</p>
Order Status	<p>Measures the response time (by percentage and mean time) for: Firm Order Confirmations (C-FOCs and D-FOCS *), Jeopardize / revised due date, Rejects, and Completions from the time an order is sent to the ILEC until a status is received</p> <p>*C-FOC: accepted, no change D-FOC: does not match due date</p>	<ul style="list-style-type: none"> • FOC: 100% ≤ 4 hrs • Jeopardies/revised due date: 100% ≤ 4 hours • Rejects: ≥ 97% in ≤ 15 seconds • Order Completions: ≥ 97% received within 30 min of order completion <p>OP-4 $[\text{\# of FOCs returned} + (\text{Total \# of Orders Sent}) - \text{Rejects Returned}] \times 100$</p> <p>OP-5 <u>Mean Time to Return FOC</u></p> <p>OP-6 $[\text{\# of D_FOCs returned in } \leq 4 \text{ hours} + (\text{Total \# of Orders sent} - \text{Rejects Returned})] \times 100$</p> <p>OP-7 <u>Mean Time to Return D-FOCS</u></p> <p>OP-8 $(\text{\# of Rejects returned in } \leq 15 \text{ seconds}) + (\text{Total \# of Rejects Returned}) \times 100$</p>

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ORDERING AND PROVISIONING (OP) (con'd)

Function	Measurement Objective	Proposed Service Quality Measurement
		<p>OP-9 <u>Mean Time to Return Rejects</u></p> <p>OP-10 Jeopardies returned w/ 70% of allotted order time + Total # Jeopardies Returned</p> <p>OP-11 (# of Completions returned in ≤ 30 minutes) + (Total # Completed Orders) x 100</p> <p>OP-12 Mean Time to Return Completion</p> <p>OP-13 Jeopardies (Total C-FOCS - Total Rejects)</p>
# of Held Orders	Tracks the percentage and number of held orders within specified intervals	<p>Report for: ≥ 15 days, $\leq 0.1\%$ ≥ 90 days, = 0%</p> <p>OP-14 (# of Orders Held for \geq "x" days) + (Total # of Orders Sent to ILEC in the past "x" days) x 100 where "x" = 15 or 90 days</p> <p>OP-15 Mean Time of Orders Held Prior to Completion</p>

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MAINTENANCE / REPAIR (MR)

Function	Measurement Objective	Proposed Service Quality Measurement
Time to Restore (TTR)	<p>Measures the percent of restorals made by product and service within 24 hours or less*</p> <p><i>Measures the mean time that it takes for the ILEC to resolve customer troubles*</i></p>	<p>Out of Service No Dispatch $\geq 85\%$ in 2 hrs $\geq 95\%$ in 3 hrs $\geq 99\%$ in 4 hrs All other Troubles $\geq 95\%$ in 24 hrs Dispatch Required $\geq 90\%$ in 4 hrs $\geq 95\%$ in 8 hrs $\geq 99\%$ in 16 hrs</p> <p>MR-1 $\left(\frac{\text{\# of Troubles Restored Within "x" hours} + \text{Total \# Troubles}}{\text{Total \# of Troubles}} \right) \times 100$ where "x" = 2,3,4,8,16, or 24 "running clock" hours <u>Mean Time to Restore reported for ILEC and CLEC, for dispatch required and no dispatch required</u></p> <p>MR-2 <u>Total \# of Trouble Minutes + Total \# of Trouble Reports</u></p>
Repeat Troubles	Measures the frequency of recurring customer trouble on the same line, circuit or service*	<p>$\leq 1\%$ within 30 days*</p> <p>MR-3 # of telephone lines reporting ≥ 2 troubles in the current report month. Total number of troubles in the current report month.</p>

* Reported for the following types of service or facility: Resold POTS, Resold ISDN, Resold Centrex/Centrex-like, Resold PBX trunks, Resold Channelized T1.5 Service, Other Resold Services, UNE Platform (at least DS0 loop + local switch + transport elements), UNE Channelized DS1 (DS1 loop + multiplexing), Unbundled DS0 loop, Unbundled DS1 loop, Other Unbundled loops, Unbundled Switch, Other UNEs

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MAINTENANCE / REPAIR (MR) (con'd)

Function	Measurement Objective	Proposed Service Quality Measurement
		<u>This includes those</u> lines, circuits, or services with a second trouble ticket coded out as CC (Came Clear), CO (central office), FAC (Facility) or STA (station) that follow an initial ticket coded out as Any found or Non-found disposition.
Troubles Per 100 Lines	Measures the frequency of troubles reported within the ILEC's network	≤ 1.5 per month* MR-4 $(\# \text{ of Initial \& Repeated Trouble Reports per exchange per month}) \div (\text{Total \# of Lines per exchange}) \times 100$
Estimated Time to Restore (Appointments Met) ETTR	Measures the compliance of restoring service within the time estimated to the CLEC, reported for premises visits required and premises visit not required*	$\geq 99\%*$ MR-5 $(\# \text{ of Customer Trouble Appointments Met} \div \text{Total \# Customer Trouble Appointments}) \times 100$

* Reported for the following types of service or facility: Resold POTS, Resold ISDN, Resold Centrex/Centrex-like, Resold PBX trunks, Resold Channelized T1.5 Service, Other Resold Services, UNE Platform (at least DS0 loop + local switch + transport elements), UNE Channelized DS1 (DS1 loop + multiplexing), Unbundled DS0 loop, Unbundled DS1 loop, Other Unbundled loops, Unbundled Switch, Other UNEs

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GENERAL (GE)

Function	Measurement Objective	Proposed Service Quality Measurement
Systems Availability	Measures the availability of operations support systems and associated interfaces (for pre-ordering, ordering and provisioning, maintenance)	<p>< 0.1% unplanned downtime per month, reported for each interface:</p> <p>Pre-ordering Inquiry Interface Ordering Interface Maintenance Interface</p> <p>GE-1 $\frac{(\# \text{ Hours Interface and/or System Not Available as Scheduled}) + (\text{Total} \# \text{ Hours Scheduled Availability})}{100}$ </p> <p>GE-2 Mean # of Hours Available</p>
Center Responsiveness	Measures the time for the ILEC representative to answer business office calls in provisioning and trouble report centers.	<p>≥ 95% within 20 seconds 100% within 30 seconds</p> <p>GE-3 $\frac{\# \text{ Calls Answered Within Specified Timeframe}}{\text{Total} \# \text{ Calls from CLEC to Center}} \times 100$ </p> <p>GE-4 <u>Mean Time to Answer Calls w/o IVR; if IVR - Mean Time to Answer Calls after the end of IVR</u> </p>

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BILLING (BI)

Function	Measurement Objective	Proposed Service Quality Measurement
Timeliness of Billing Records Delivered	Measures the timeliness of billing records and wholesale bills (usage, CSRs, service orders, time & materials, adjustments) delivered to CLEC	<p>99.9% billing records received in ≤ 24 hours 100% billing records received in ≤ 48 hours $\geq 99.95\%$ wholesale bills received within 10 calendar days of bill date</p> <p>BI-1 $\frac{\# \text{ Billing Records Delivered on time}}{\text{Total \# of Billing Records Received}} \times 100$</p> <p>BI-2 Mean Time to Provide <u>Billing</u> Records</p> <p>BI-3 Mean Time to Deliver Wholesale Bills</p>
Accuracy	Measures the percentage <i>and mean time</i> of billing records delivered to CLEC in the agreed-upon format and with the complete agreed-upon content (includes time and material and other non-recurring charges)	<p>$\geq 98\%$ wholesale bill financially accurate $\geq 99.99\%$ of all records transmitted</p> <p>BI-4 $\frac{(\# \text{ of Accurate and Complete Formatted Mechanized Bills} , \text{ Total \# Mechanized Bills Received})}{\text{Total \# Mechanized Bills Received}} \times 100$</p> <p>BI-5 $\frac{\# \text{ of Billing Records Transmitted Correctly}}{\text{Total \# of Billing Records Received}} \times 100$</p>

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OPERATOR SERVICES AND DIRECTORY ASSISTANCE (DA)

Function	Measurement Objective	Proposed Service Quality Measurement
Average Speed to Answer	Measures the percent and mean time a call is answered by an OS or DA operator in a predefined timeframe. Includes all time from initiation of ringing until the customer's call is answered.	<p>For live agent, 90% of calls answered in 10 seconds. For Voice Response Unit service, 100% within 2 seconds.</p> <p>DA-1 $\frac{\text{\# Calls Answered Within "x" seconds}}{\text{Total DA Calls}} \times 100$ where "x" equals 2 or 10 seconds</p> <p>DA-2 <i>DA Mean Time To Answer</i></p> <p>OS-1 $\frac{\text{\# Calls Answered Within "x" seconds}}{\text{Total OS Calls}} \times 100$ where "x" equals 2 or 10 seconds</p> <p>OS-2 <i>OS Mean Time To Answer</i></p>

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NETWORK PERFORMANCE (NP)

Function	Measurement Objective	Proposed Service Quality Measurement
Network Performance Parity	Compares ILEC performance distribution for its own customers to ILEC performance distribution for CLEC customers. Measures the deviation from supplier service performance distribution for each metric specified.	<p>Deviation $\leq 0.10\%$ from supplier service performance distribution:</p> <p>Transmission quality:</p> <ul style="list-style-type: none"> • Subscriber Loop Loss • Signal to Noise Ratio • Idle Channel Circuit Noise • Loops-Circuit Balance • Circuit Notched Noise • Attenuation Distortion <p>Speed of Connection:</p> <ul style="list-style-type: none"> • Dial Tone Delay • Post Dial Delay • Call Completion/ Delivery Rate <p>Reliability Requirements: (For TSR Only)</p> <ul style="list-style-type: none"> • Network incidents affecting > 5000 blocked calls • Network incidents > 100,000 blocked calls <p>Statistical comparison based on the Mean ILEC Customer Experience and standard deviation from this mean, the Mean CLEC Customer Experience and standard deviation from this mean, and the number of observations used to determine these means.</p> <p>NP-1 (Mean ILEC customer experience - Mean CLEC customer experience) + Mean ILEC customer experience x 100 <i>Deviation between ILEC performance for ILEC and CLEC customers must be less than 0.10%.</i></p>

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INTERCONNECT / UNBUNDLED ELEMENTS AND COMBOS (IUE)

Function	Measurement Objective	Proposed Service Quality Measurement
Availability of Network Elements	Measures the availability of network elements (e.g. signaling link transport, SCPs/ Databases, & loop combinations)	<p>Loop Combo availability 100%</p> <p>Signaling Link Transport Unavailability:</p> <ul style="list-style-type: none"> • A-Link: ≤ 1 min per year • D-Link: ≤ 1 sec per year • SCPs/Databases: ≤ 15 min per year • SCPs/Databases correctly updated: $\geq 99\%$ in ≤ 24 hrs <p>IUE-1 $\frac{\# \text{ minutes Loop unavailable}}{\text{Total \# minutes}} \times 100$</p> <p>IUE -2 $\frac{\# \text{ minutes A-link available during "x" years}}{\text{"x" years}}$</p> <p>IUE-3 $\frac{\# \text{ seconds D-link unavailable during "x" year}}{\text{"x" year}}$</p> <p>Where $x \leq$ or \geq year. After year, monthly reporting should be for a rolling year.</p> <p>IUE-4 $\frac{\# \text{ Database Records Correctly Updated}}{\text{Total \# Update Requests Received by ILEC}} \times 100$</p> <p>IUE-5 $\frac{(\# \text{ Database Records Updated within 24 hours of Update Request Receipt})}{(\text{Total \# Database Update Requests Received})} \times 100$</p>

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INTERCONNECT / UNBUNDLED ELEMENTS AND COMBOS (IUE) (con'd)

Function	Measurement Objective	Proposed Service Quality Measurement
Performance of Network Elements	Measures the performance of network elements (e.g. LIDB, routing to CLEC OS/DA platforms, 800, AIN)	<p>Example:</p> <ul style="list-style-type: none"> •LIDB reply rate to all query attempts $\geq 99.95\%$ •LIDB query time-out $\leq 0.05\%$ •Unexpected data values in replies for all LIDB queries $\leq 1\%$ •% of LIDB queries return a missing customer record = 0% •Group troubles in all LIDB queries $\leq 0.5\%$ <p>Delivery to OS platform:</p> <p>Mean Post Dial Delay for "0" calls from LSO to CLEC OS platform ≤ 2 seconds PDD for "0+" calls with 6 digit analysis from LSO to CLEC OS platform: $95\% \leq 2.0$ sec; Mean ≤ 1.75 sec</p> <p>Percent of call attempts to CLEC OS Platform that were blocked $\leq 0.1\%$</p> <p>IUE-6 $\frac{(\# \text{ LIDB} \text{ or } 800 \text{ or AIN or } n \text{Query Replies Received by CLEC}) + (\text{Total } \# \text{ LIDB} \text{ or } 800 \text{ or AIN or } n \text{Queries Received by ILEC})}{\text{Total } \# \text{ LIDB} \text{ or } 800 \text{ or AIN or } n \text{Queries Received by ILEC}} \times 100$</p> <p>IUE-7 $\frac{(\# \text{ LIDB} \text{ or } 800 \text{ or AIN or } n \text{time-out responses received by CLEC}) + (\text{Total } \# \text{ LIDB} \text{ or } 800 \text{ or AIN or } n \text{Queries Received by ILEC})}{\text{Total } \# \text{ LIDB} \text{ or } 800 \text{ or AIN or } n \text{Queries Received by ILEC}} \times 100$</p> <p>IUE-8 $\frac{(\# \text{ LIDB} \text{ or } 800 \text{ or AIN or } n \text{Query Replies with unexpected data values received by CLEC}) + (\text{Total } \# \text{ LIDB Queries Received by ILEC})}{\text{Total } \# \text{ LIDB Queries Received by ILEC}} \times 100$</p>

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INTERCONNECT / UNBUNDLED ELEMENTS AND COMBOS (IUE) (con'd)

Function		
		<p>IUE-9 $\left(\frac{\# \text{ LIDB} \text{ or } 800 \text{ or AIN or } n \text{ Query Replies missing customer record received by CLEC}}{\text{Total } \# \text{ LIDB} \text{ or } 800 \text{ or AIN or } n \text{ Queries received by ILEC}} \right) \times 100$</p> <p>IUE-10 $\left(\frac{\text{Cumulative Total } \# \text{ Post Dial Delay Seconds experienced on "0" calls from LSO to CLEC OS platform}}{\text{Total } \# \text{ "0" calls from LSO to CLEC OS platform}} \right) + \left(\frac{\text{Cumulative Total } \# \text{ Post Dial Delay Seconds experienced on "0+" calls with 6 digit analysis from LSO to CLEC OS platform}}{\text{Total } \# \text{ "0+" calls with 6 digit analysis from LSO to CLEC OS platform}} \right)$</p> <p>IUE-11 $\left(\frac{\text{Cumulative Total } \# \text{ Post Dial Delay Seconds experienced on "0+" calls with 6 digit analysis from LSO to CLEC OS platform}}{\text{Total } \# \text{ "0+" calls with 6 digit analysis from LSO to CLEC OS platform}} \right) + \left(\frac{\text{Cumulative Total } \# \text{ Post Dial Delay Seconds experienced on "0+" calls with 6 digit analysis from LSO to CLEC OS platform}}{\text{Total } \# \text{ "0+" calls with 6 digit analysis from LSO to CLEC OS platform}} \right)$</p> <p>IUE-12 $\left(\frac{\# \text{ of "0+" calls with 6 digit analysis from LSO to CLEC OS platform that have Post Dial Delay } \leq 2 \text{ seconds}}{\text{Total } \# \text{ "0+" calls with 6 digit analysis from LSO to CLEC OS platform}} \right) + \left(\frac{\# \text{ of "0+" calls with 6 digit analysis from LSO to CLEC OS platform that have Post Dial Delay } \leq 2 \text{ seconds}}{\text{Total } \# \text{ "0+" calls with 6 digit analysis from LSO to CLEC OS platform}} \right)$</p> <p>IUE-13 $\left(\frac{\# \text{ Blocked Call Attempts to CLEC OS Platform}}{\text{Total } \# \text{ Call Attempts to CLEC OS Platform}} \right) \times 100$</p>

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FORMULAS QUICK REFERENCE GUIDE

Metric No.	Formula
PRE-ORDER	
PO-1	$\frac{\text{\# of Responses Received on Time}}{\text{Total \# of Queries Sent}} \times 100$
PO-2	Mean Cycle Time
ORDERING AND PROVISIONING	
OP-1	$\frac{\text{\# of Orders Completed on Time}}{\text{Total \# of Order Completed}} \times 100$
OP-2	Mean Completion Interval
OP-3	$\frac{\text{\# of Orders Completed w/o Error}}{\text{Total \# of Orders Sent}} \times 100$
OP-4	$\frac{[\text{\# of C-FOCs Returned in } \leq 4 \text{ hours} + (\text{Total \# of Orders Sent} - \text{Syntax Rejects Returned})]}{\text{Total \# of Orders Sent}} \times 100$
OP-5	Mean Time to Return FOC
OP-6	$\frac{[\text{\# of D-FOCs Returned in } + (\text{Total \# of Orders Sent} - \text{Rejects Returned})]}{\text{Total \# of Orders Sent}} \times 100$

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OP-7	Mean Time to Return <i>D-FOCs</i>	
OP-8	(# of <i>Syntax</i> Rejects Returned in ≤ 15 seconds) + (Total # of <i>Syntax</i> Rejects Returned)	x 100
OP-9	Mean Time to Return Rejects	
OP-10	<i>Jeopardies Returned within 70% of allotted order time + Total number Jeopardies Returned</i>	
OP-11	(# of Completions Returned in ≤ 30 minutes) + (Total # Completed Orders)	x 100
OP-12	Mean Time to Return Completion	
OP-13	Jeopardies Total C-FOCs - Total Rejects	
OP-14	(# of Orders Held for $\geq x$ days) + (Total # of Orders Sent to ILEC in past x days)	x 100
OP-15	Mean Time of Orders Held Prior to Completion	
MAINTENANCE / REPAIR		
MR-1	(# of Troubles Restored within x hours + Total # Troubles) where "x" = 2,3,4,8,16 or 24 "running clock" hours	x 100

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MR-2	<u>Total # of Trouble Minutes</u> Total # of Trouble Reports	
MR-3	# of telephone lines reporting ≥ 2 troubles in the current report months + Total # of troubles in current report months	
MR-4	<u># of Initial & Repeated Trouble Reports per exchange per month</u> Total # of Lines per exchange	x 100
MR-5	<u># Customer Trouble Appointments Met</u> Total # Customer Trouble Appointments	x 100
GENERAL		
GE-1	(# Hours Interface and/or System Not Available as Scheduled) + (Total # Hours Scheduled Availability)	x 100
GE-2	Mean # of Hours Available	
GE-3	<u># Calls Answered within Specified Timeframe</u> Total # Calls from CLEC to Center	x 100
GE-4	Mean Time to Answer Calls w/o IVR; If IVR, Mean Time to Answer Calls after end of IVR	
BILLING		
BI-1	<u># Billing Records Delivered on Time</u> Total # of Billing Records Received	x 100

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BI-2	Mean Time to Provide Billing Records	
BI-3	Mean Time to Deliver Wholesale Bills	
BI-4	(# of Accurate & Complete Formatted Mechanized Bills + Total # Mechanized Bills Received)	x 100
BI-5	$\frac{\text{\# of Billing Records Transmitted Correctly}}{\text{Total \# of Billing Records Received}}$	x 100
DIRECTORY ASSISTANCE AND OPERATOR SERVICES		
DA-1	$\frac{\text{\# Calls Answered within "x" seconds}}{\text{Total DA Calls}}$ where "x" equals 2 or 10 seconds	x 100
DA-2	DA Mean Time to Answer	
OS-1	$\frac{\text{\# Calls Answered within "x" seconds}}{\text{Total OS Calls}}$ where "x" equals 2 or 10 seconds	x 100
OS-2	OS Mean Time to Answer	
NETWORK PERFORMANCE		
NP-1	(Mean ILEC customer experience - Mean CLEC customer experience) + Mean ILEC Customer Experience	x 100

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INTERCONNECTION / UNBUNDLED ELEMENTS AND COMBOS

IUE-1	<u># Minutes Loop available</u> Total # Minutes	x 100
IUE-2	<u># Minutes A-link unavailable during x years</u> x years (where "x" < or > 1 year after first year, monthly reporting should be for a rolling year.	
IUE-3	<u># Seconds D-link unavailable during x years</u> x years	
IUE-4	<u># Database Records Correctly Updated</u> Total # Update Requests Received by ILEC	x 100
IUE-5	(# Database Records Updated within 24 hrs. of Update Request Received) + (Total # Database Update Requests Received)	
IUE-6	(# LIDB [or 800 or AIN or n] Query Replies Received by CLEC) + (Total # LIDB [or 800 or AIN or n] Queries Received by ILEC	x 100
IUE-7	(# LIDB [or 800 or AIN or n] Time-Out Responses Received by CLEC) + (Total # LIDB [or 800 or AIN or n] Queries Received by ILEC)	x 100
IUE-8	(# LIDB [or 800 or AIN or n] Query Replies with Unexpected Data Values Received by CLEC) + (Total # LIDB [or 800 or AIN or n] Queries Received by ILEC)	x 100

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IUE-9	(# LIDB [or 800 or AIN or n] Query Replies Missing Customer Record Received by CLEC) + (Total # LIDB [or 800 or AIN or n] Queries Received by ILEC)	x 100
IUE-10	(Cumulative Total # Post Dial Delay Seconds experienced on "0" calls from LSO to CLEC OS platform) + (Total # "0" calls from LSO to CLEC OS platform)	
IUE-11	(Cumulative Total # Post Dial Delay Seconds experienced on "0+" calls with 6-digit analysis from LSO to CLEC OS platform) + (Total # "0+" calls with 6-digit analysis from LSO to CLEC OS platform)	
IUE-12	(# of "0+" calls with 6-digit analysis from LSO to CLEC OS platform that have Post Dial Delay \leq 2 seconds) + (Total # "0+" calls with 6-digit analysis from LSO to CLEC OS platform)	
IUE-13	<u># Blocked Call Attempts to CLEC OS Platform</u> Total # Call Attempts to CLEC OS Platform	x 100